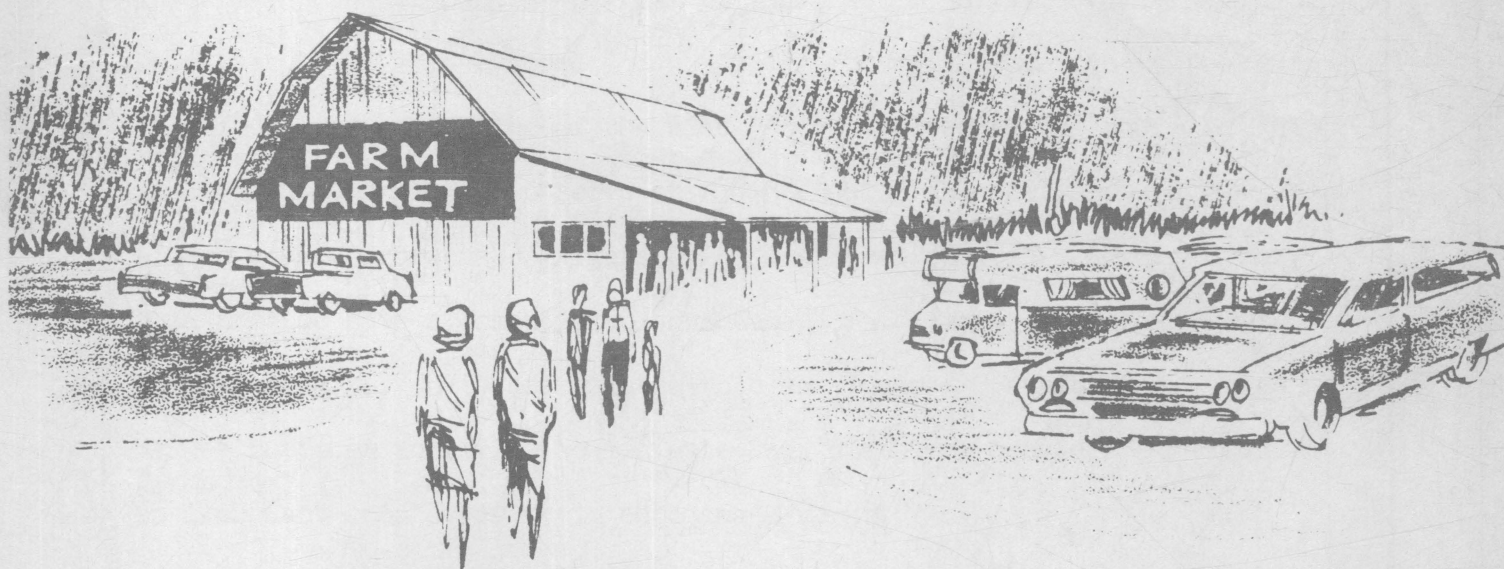


ESS 570

MM 385

# KEEPING FOOD WHOLESOME IN OHIO ROADSIDE MARKETS



COOPERATIVE EXTENSION SERVICE - THE OHIO STATE UNIVERSITY

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Roy M. Kottman, Director of the Cooperative Extension Service, The Ohio State University.

ESS 570  
MM 385  
July 1978

## KEEPING FOOD WHOLESOME IN OHIO ROADSIDE MARKETS

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Food wholesomeness and food safety is a concern of owners and managers of roadside markets and their customers. In addition to meeting the spirit and intent of regulatory agencies' requirements, the farm market operator can differentiate his market successfully by convincing customers that his market is clean and that food quality in that market is enhanced by policies and procedures that assure freshness and wholesomeness.

### Customers Choose Clean Markets

Customers choose stores by the differences they observe between stores. In surveys conducted by the Cooperative Extension Service of The Ohio State University<sup>1/</sup> on what customers consider important in selecting a food store, cleanliness is at the top of the list, or very close to the top. This may imply that customers do observe or sense considerable differences in cleanliness between markets. Markets which implement successful programs in this area do have a competitive advantage. This factor alone can justify a major emphasis on issues related to cleanliness and sanitation. Roadside market customer surveys also indicate that customers consider cleanliness an important consideration in choosing a market.<sup>2/</sup>

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<sup>1/</sup> Watkins and Vandemark, "Customer Information Strengthens Market Information Systems," Journal of Retailing, Vol. 47, No. 1, Spring, 1971.

<sup>2/</sup> Watkins and Bradley, "Ohio Customers and Their Roadside Markets," Cooperative Extension Service, MM 381, 1978, p. 12.

### Food May Deteriorate

There are a number of reasons why food may deteriorate in quality. This deterioration may be economic in nature because of loss in freshness or in excessive shrink related to moisture loss, markdowns, repackaging, reprocessing or loss as perishables become unacceptable. Some product deterioration is related to food safety and wholesomeness. Most of the bacterial organisms that can contaminate food are not harmful to health, but may contribute to a speed-up in deterioration of quality.

### Organisms Which Contaminate

Some of the organisms that can contaminate food in retail stores and are carried into the store by people, products or air circulation are identified as:<sup>3/</sup>

#### Molds

Molds generally produce strong flavor changes and may cause texture changes. Molds liberate spores that are light in weight and remain suspended in the air for long periods. Build-ups of mold are usually quite visible. Molds have a low heat resistance and most are killed by temperatures of 140 F. (60 C.) or higher. Some molds, in blue cheese for example, are useful.

#### Yeasts

Yeasts are similar botanically to molds, but require more water for growth. Hence, they are more of a problem in liquid foods. While yeasts

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<sup>3/</sup> Kramer, Food and the Consumer, The AVI Publishing Co., West Port, Connecticut, 1973, pp. 159-162.

can be a cause of spoilage in fruit and vegetables, they are, on the whole, beneficial organisms and are essential in producing wine, beer, and bread. Like molds, they are susceptible to destruction by heat and inhibited by selected chemicals.

### Bacteria

Most forms of microbial contamination do not present a health hazard, although some may hasten the natural decay process in perishable foods. A few may produce harmful toxins or infections.

Clostridium botulinum--a common soil organism which secretes a very powerful poison when it grows in food. A high proportion of botulism cases are fatal. It grows only in foods from which the air is excluded. In the United States, it is quite rare in commercially processed food, but may be found in improperly processed food. Botulism is usually associated with foods which might have soil adhering to them and have a neutral or slightly alkaline pH. Underprocessed snapbeans and mushrooms are examples of susceptible canned foods. The toxin is destroyed by vigorous boiling for ten minutes. Market operators should immediately remove from sale, isolate, and inform health authorities of canned foods where cans are bulged, indicating pressure within.

Clostridium perfringens--a form of bacteria that may produce a toxin where oxygen is limited. Meat, particularly if held at temperatures around 90 - 100 F. for one to four hours, is a common vehicle. It may also grow in deep dishes of food held on steam tables close to the above temperatures.

Staphylococcus aureus--a prominent bacterial offender. It is a common inhabitant of the skin, mouth, nose and throat. When certain strains grow in foods, they liberate a toxin which produces a rather severe gastroenteritis. They will not produce the toxin at temperatures below 45 F., are quite salt tolerant, and prefer a pH just about neutral (6.5 to 7.5). They are most dangerous when they gain access to previously pasteurized foods because they do not grow well in competition with other organisms. The source of contamination is usually a human handler. Thus, the most dangerous types of foods are ones like sliced ham, baked ham, filled bakery products or some warm desserts. The toxin liberated by Staphylococci is not destroyed by cooking procedures.

Salmonella--probably the most common infectious disease spread by food. The Salmonella habitat is the gut of man and animals, where they produce illness of varying severity. The chain is perpetuated by rodents, contaminated food, and careless handling. Fresh meat, poultry, and fish carcasses are possible carriers of salmonella related to careless handling. The salmonellae are not heat resistant, and are eliminated by heat processing.

These organisms, plus a few others (Trachaeanae and Tuberculosis, for example) are the focus of the attention of regulatory agencies concerned with food safety. The objective of the regulations is to interrupt the chain of infection or break the life cycle of the organism. Roadside market sanitation programs play an important part in reducing the risk of food associated toxins and infections.

#### Other Essentials

Some other parts of a market's wholesome food program are concerned with rotation of inventory to insure first-in, first-out procedures

whether from cooler or from the display. This may be implemented by coding or open dating of cartons and packages. The merits of open dating accrue primarily to the market operator, as any employee can observe and take action on outdated products.

A soundly based program identifies and communicates to all employees the importance of physical cleanliness of people, equipment and of the store itself to eliminate sources of contamination. It is equally concerned about breaking the chain of possible infections with realistic sanitation programs which go beyond cleanliness. A productive sanitation program alerts, trains and supervises employee personal and work habits having a bearing on wholesome food. One side benefit of a successful program is the relative advantage of a market operator who has alert employees concerned about issues related to food wholesomeness. Employee attitude may be reflected in better store maintenance and communicated to customers who sense this concern.

There are rather impressive cost/benefit ratios for a successful program. Studies<sup>4/</sup> in New Mexico, Missouri and New Jersey all indicate surprisingly uniform benefits associated with good sanitation programs. Thus, there are economic benefits as well as a more positive market image as viewed by customers.

Any successful program must involve those who do the work in the market. Understanding and commitment on the part of employees about the subject of keeping food wholesome are necessary.

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<sup>4/</sup> Orts and Vastine, "Meat Sanitation Pays," Agricultural Extension Service, L 1102, Texas A & M University, College Station, Texas

### Check List

The following check list is arranged by commodity groups. Suggestions for involving people are:

1. The market operator reviews the check lists with key employees, soliciting suggestions for changes and improvements.
2. The check list would then be revised to meet the objectives of management and employees.
3. The revised version would periodically be reviewed by the market operator and employees to reinforce the message and to inform new employees. A program in which employees feel they had a part will more likely be implemented than one which is imposed.

The check lists were developed by cooperative efforts of the U.S. Department of Agriculture Extension Service; Cooperative Extension Service Specialists in Pennsylvania, Ohio, North Carolina, Missouri, Georgia, Virginia and Texas; and selected retailers.<sup>5/</sup> Where the term cleaning is used it usually refers to using a detergent solution to obtain a clean surface. Sanitizing refers to using a solution of an approved sanitizer, usually a chlorine product, according to directions.

Additional check lists covering fresh meats, bakery, frozen foods, prepared foods and restaurant operations in markets are available from The Department of Agricultural Economics and Rural Sociology at The Ohio State University.

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<sup>5/</sup> Watkins, "Keeping Food Wholesome in Retail Food Stores," ESO 187, Department of Agricultural Economics and Rural Sociology, The Ohio State University.



PRODUCE	As Needed	Daily	Weekly	Monthly	Quarterly	Special
<p><u>Produce Display</u></p> <p>All produce on display will be clean and free from decay and other contaminants, and will be checked and policed regularly during the day.</p> <p>Perishable produce will not be displayed above identifiable load lines. Most perishable items will be displayed at temperatures below 40 degrees as measured in refrigerated zone. Produce cases will be policed and temperatures checked each morning and evening.</p> <p>Cases, price tags, racks, tables, floors and holding areas will be cleaned and sanitized weekly. Ceilings and walls will be vacuumed quarterly.</p> <p><u>Produce Preparation</u></p> <p>Produce work benches will be cleaned and sanitized daily. Surfaces should be non-porous and easily cleaned.</p> <p>Walls, ceilings and light fixtures will be vacuumed quarterly.</p> <p>Floors will be washed and sanitized daily. Drains will be kept open and clean.</p> <p>Knives, tools, and equipment whose surfaces will contact produce will be cleaned and sanitized on a daily schedule.</p> <p>Leak proof, easily cleaned trim barrels will be used for produce waste. These barrels will be equipped with plastic liners that will be closed and moved to the trash area upon filling. Barrels will be washed and sanitized once a week. Garbage grinders are encouraged where permitted.</p> <p>Sinks of non-absorbent materials will be washed and sanitized daily.</p> <p>Produce will be stored on racks off the floor and away from walls.</p> <p>Clean hair guards, aprons, jackets or smocks will be worn; hands, hair and finger nails will be clean.</p>		✓	✓		✓	
		✓				
		✓	✓		✓	
		✓			✓	
		✓				
		✓	✓			
		✓				
		✓				✓
						✓

PRODUCE (Con't.)	As Needed	Daily	Weekly	Monthly	Quarterly	Special
No smoking or eating in the produce area.						✓
<u>Produce Cooler</u>						
Walls, ceilings, shelves and blowers will be cleaned and sanitized monthly.				✓		
Floors will be cleaned and sanitized weekly. Drains will be kept clean and open.			✓			
Condensation drip trays will be washed and sanitized monthly.				✓		
Produce in coolers will be on racks off the floor and away from walls to allow for adequate circulation of refrigerated air.						✓
(FIFO) first-in-first-out rotation will be followed.						✓
Temperature in cooler will be below 40 degrees, as measured by a thermometer located in center of cooler above stored products.		✓				
Products, such as tomatoes, cucumbers, and eggplant, which are subject to cold injury, should not be stored where temperature is 40° or colder.						✓

FROZEN FOODS

Frozen Food Displays

All products will be stocked below identified load lines.

Frozen foods will be held at zero degrees Fahrenheit and ice cream at minus 20 degrees Fahrenheit, as measured in the refrigerated zone, except during necessary defrost cycles. Case will be policed and temperatures checked each morning and evening.

Frozen food and ice cream will be moved quickly from truck to freezer and freezer to display so that temperatures will not go above zero degrees for frozen food and minus 20 degrees for ice cream.

Broken packages and those with ice and discolored product will be removed from display. Residue from broken packages should be cleaned from case as observed. Products will be rotated to assure (FIFO) first-in-first-out rotation.

Frozen food display cases will be cleaned and sanitized quarterly.

Floors will be cleaned and sanitized weekly; walls and ceilings will be vacuumed quarterly.

Frozen Food Boxes

Frozen foods will be delivered to the store in clean trucks with product temperatures at zero degree Fahrenheit; ice cream minus 20 degrees Fahrenheit. All products will be moved directly into freezer box or display cases from truck.

Floors, walls, ceilings, and blowers in freezer boxes will be cleaned and sanitized once a year.

Temperatures of zero degree Fahrenheit for frozen foods and minus 20 degrees Fahrenheit for ice cream will be maintained in freezer boxes. Temperatures will be taken by thermometers located in center of box above stored products at store opening and closing.

Frozen food will be stored on racks away from walls so as to provide free circulation of refrigerated air.

Products will be dated on outside of cartons and rotation practiced so first in first out will be achieved.

As Needed	Daily	Weekly	Monthly	Quarterly	Special
-----------	-------	--------	---------	-----------	---------

					✓
	✓				
				✓	
✓					
				✓	
		✓			
					✓
					✓
					✓
					✓

GROCERY

Grocery Displays

All products on display will be in good condition. Dented and swollen cans and torn and cut packages will be removed from displays.

All food items should be rotated to assure first-in-first-out rotation.

Insecticides, rodenticides, and other hazardous chemicals which are potential contaminators of food will be displayed in areas at a safe distance from food in porous packages. Protective non-porous bags with adequate warnings will be available for packaging these products.

Dog food meal will be displayed in areas away from food in porous packages. Torn and broken packages will be removed from display. Residue from broken packages will be cleaned as observed.

Displays of products will be located so that the more perishable items such as frozen foods and ice cream will be late in the shopping pattern.

Shelves and products will be dusted when restocking displays. All shelving will be cleaned and sanitized on a three months cycle.

Floors will be cleaned and sanitized weekly, walls and ceilings will be vacuumed quarterly.

Grocery Storage

Floors should be vacuumed weekly and will be cleaned and sanitized on a quarterly basis. Residue from broken packages will be cleaned as observed. Walls and ceilings will be vacuumed on a semi-annual basis.

All products will be on racks or skids off the floor. Racks and skids will be cleaned and sanitized on a quarterly basis. Potential contaminators will be cleaned and sanitized as observed.

A segregated area will be used for returnable bottles and they will be placed in containers off the floor.

As Needed	Daily	Weekly	Monthly	Quarterly	Special
	✓				
					✓
					✓
					✓
				✓	
	✓			✓	
	✓			✓	
				✓	✓
					✓

GROCERY (Con't.)

	As Needed	Daily	Weekly	Monthly	Quarterly	Special
All "morgue" items will be placed in closed packages and will be removed within one week after placing in the "morgue."			✓			
Conveyors, stairs, and elevators will be vacuumed weekly and will be cleaned and sanitized monthly and cleaned of contaminants as observed.			✓			
Dollies used in conveying products from truck to back-room will be cleaned and sanitized monthly and will be cleaned and sanitized when contaminants are observed.				✓		
<u>Checkout Areas</u>						
All checkout personnel will be personally clean and dressed in clean clothing or uniform.						✓
All checkout counters will be cleaned and sanitized daily. All leakage from meat, poultry or milk packages will be wiped up with disposal towels, cleaned and sanitized.	✓					
All observed leaking poultry and meat packages will be placed in plastic bags. All frozen foods and ice cream will be placed in insulated bags.						✓
Shopping carts will be cleaned and sanitized monthly and cleaned of contaminants as observed.				✓		
Potential contaminants such as hazardous chemicals and insecticides will be bagged separately from food items.						✓
Floors will be vacuumed each evening, cleaned and sanitized weekly. Ceilings and walls will be vacuumed quarterly.	✓		✓		✓	

DAIRY	As Needed	Daily	Weekly	Monthly	Quarterly	Special
<u>Dairy Display Area</u>						
Dairy display cases will be cleaned and sanitized weekly except milk sections where case will be cleaned and sanitized each day. All leakage and contamination will be cleaned and sanitized as observed.		✓	✓			
Drains and air ducts will be cleaned monthly or more often as needed. Coils will be defrosted periodically with the cycle being long enough to allow frost and excess moisture to be removed. Defrost cycle will be checked weekly and adjusted as needed.			✓	✓		
Dairy products including milk, eggs and dough products will be displayed in cases at temperatures below 40 degrees Fahrenheit in refrigerated zone. Dairy case will be policed and temperatures checked each morning and evening.		✓				
Dairy case lights will be turned off when store is not open for business. Milk and milk products will not be stacked adjacent to lights to prevent excess oxidation.						✓
Dairy products will not be stocked above identifiable load lines. Improper stocking interfering with air flow will raise product temperature 15-20 degrees.						✓
Dairy products will not be stacked in the aisles. All products brought into the aisle for stocking will be moved immediately into the display case.						✓
Milk in paper containers will not be stocked by grasping top of container.						✓
First-in-first-out rotation (FIFO) practices will be followed in the dairy case. All items will be checked each day and those exceeding expiration dates will be removed.		✓				✓
All torn, open, and/or inflated packages of dairy products including milk, and cracked egg leakers will be removed from dairy case as observed.	✓					
Floors will be cleaned and sanitized weekly. Walls and ceilings vacuumed monthly.			✓			

DAIRY (Con't.)	As Needed	Daily	Weekly	Monthly	Quarterly	Special
<p><u>Dairy Receiving</u></p> <p>Dairy products will be received in clean refrigerated trucks with product temperatures at 40 degrees Fahrenheit or below.</p> <p>Delivery trucks will have curtains or other devices to maintain desired temperatures within the truck during delivery operations.</p> <p>Dairy products including eggs will be moved immediately into cooler, refrigerated display or holding boxes. When deliveries are made during normal store hours, the dairy manager will help with the receiving operation to insure that the product is immediately placed under refrigeration. Orders will be checked in the cooler rather than on the dock.</p>						✓
<p><u>Dairy Cooler</u></p> <p>Temperatures in dairy cooler will be below 40 degrees Fahrenheit and thermometers will be located in center of cooler above products. Cooler will be policed and temperatures checked each morning and evening.</p> <p>First-in-first-out rotation (FIFO) practices will be followed in the dairy cooler. All items will be checked each day and those exceeding expiration dates will be segregated in a "morgue" area for return to suppliers.</p> <p>All damaged packages and products beyond expiration date will be removed from "morgue" within one week of expiration date or one week after removal from display case.</p> <p>Dairy products including eggs will be stored on easily cleaned rust resistant shelves and racks and away from walls to provide adequate circulation of refrigerated air.</p> <p>Blowers, grills and condensation drip trays will be cleaned and sanitized quarterly or more often as needed.</p>	✓	✓	✓		✓	✓

DAIRY (Con't.)

	As Needed	Daily	Weekly	Monthly	Quarterly	Special
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DAIRY (Con't.)

Racks and shelves will be cleaned and sanitized weekly.

Floors, walls and ceilings will be of non-porous, easily cleaned material. Floors, walls and ceilings will be cleaned and sanitized weekly. Leakage and contamination will be cleaned and sanitized as observed.

Drains will be clean and workable.

Clothes and other contaminants will not be stored in the cooler. Fruits and vegetables with strong odors will not be stored with dairy products.

As Needed	Daily	Weekly	Monthly	Quarterly	Special
		✓			
✓		✓			
					✓
					✓

PEST CONTROL

	As Needed	Daily	Weekly	Monthly	Quarterly	Special
<u>Pest Management</u>						
Trash areas will be cleaned and sanitized following trash pickup. All garbage and waste will be kept in leak-proof, non-absorbent containers covered with tight fitting lids. These containers will be cleaned and sanitized after each use. If plastic liners are used, the containers will be cleaned and sanitized weekly.			✓			
Trash garbage and waste will be picked up daily.		✓				
Garbage and waste will be segregated from recyclable paper and from other trash.						✓
Store, garbage, trash, "morgue", and bottle return areas will be constructed to exclude all vermin such as rats, mice, flies, and other insects.						✓
Regular monthly, or oftener if needed, inspections of store premises will be made and control measures used for control of vermin--rats, mice, flies, roaches, and other insects.				✓		
No dogs (except seeing eye dogs), cats, or other pets will be allowed on the premises.						✓

EMPLOYEE PERSONAL CHECK LIST

All employees serving customers and handling unprotected food will wear clean clothes.

All employees will maintain clean appearing hair, controlled in such a manner that hair will not contaminate food products.

All employees who exhibit fever or severe cold symptoms will not handle unprotected food.

Fingernails and exposed skin surfaces will be kept clean.

Employees will wash hands upon reporting to work, returning from a break, or after going to the toilet.

Employees handling unprotected food will refrain from rubbing hands through hair or across exposed skin surfaces.

### Check Regulations

When making major changes in a roadside market, local Departments of Health may be helpful in assisting operators in complying with local regulations.

No special permits or licenses are required in Ohio to sell produce and groceries. Markets selling fresh meats will likely be inspected more frequently than markets with only produce. Both health departments and the State Department of Agriculture have jurisdiction where fresh meats are sold. Sanitation and equipment specifications for fresh meats are more exacting. If bakery products are produced on the premises, a State of Ohio license is required and premises will be inspected before and after the license is granted. If prepared food is served on the premises, a restaurant inspection and license issued by the local health jurisdiction is required.

### Program Emphasis

In summary, wholesome food may be maintained in roadside markets by emphasizing:

1. Slowing natural processes or ripening, aging and respiration.
2. Keeping perishable foods hot or keeping them cold, and preventing contamination.
3. Using rotation procedures which assure first-in, first-out movement of all merchandise inventory.
4. The importance of personal cleanliness and desirable work habits. People are a common source of possible contamination.
5. A clean market helps prevent contamination and favorably impresses customers.

6. Sanitizing procedures to prevent a build-up of organisms which may affect food.
7. There is a positive dollar and cents benefit from an effective in-store program.

Other Roadside Farm Market publications available from the Department of Agricultural Economics and Rural Sociology include:

"Proceedings at the 1978 Roadside Marketing Conference," - \$5.00  
(for sale only)

"Ohio Customers and Their Roadside Markets"

"Developing Merchandising Plans for Roadside Markets"

"Financial Planning for Roadside Markets"

"Ohio Roadside Market Management and Marketing Practices"

